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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
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08/206742  
08/206.792 03/04/94 THACKERAY

M YADAA105

EXAMINER
NOZZOLI, CLO, M

11M1/0916

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HOUSTON, TX 77210

ART UNIT	PAPER NUMBER
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1111  
DATE MAILED:

09/16/96

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☒ Responsive to communication(s) filed on 6/21/96

☒ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1, 3-20 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1, 3-20 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of Reference Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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### **Part III     DETAILED ACTION**

#### ***Response to Amendment***

1. Applicant's arguments filed 6/21/96 have been fully considered but they are not deemed to be persuasive.

#### ***Claim Rejections - 35 USC § 103***

2. Claims 1, 3-4, 7-15 and 18-20 are rejected under 35 U.S.C. § 103 as being unpatentable over Thackeray et al. 4,507,371.

The instant claims are drawn to the same invention as originally presented claims.

Thackeray et al. '371 is applicable for the reasons of record. In that, it shows a spinel lithium manganese dioxide with stabilizing cations (col. 1, lines 11-24 and col. 2, lines 47-50). The anode and cathode may be made with the spinel material. The electrolyte may be one containing a lithium salt and a solvent (col. 5, lines 10-16). Moreover, specific anode and cathode materials are listed in col. 6, lines 1-20. The cathode may contain a lithium transition metal oxide.

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because the artisan has sufficient skill to select the materials necessary for the voltage requirements needed.

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*Response to Arguments*

The arguments presented by the Applicants in trying to overcome this rejection are not convincing. The assertion that the prior art does not suggest the type of cathode and type of battery is not on point. As discussed supra, the reference does indeed disclose the same battery system as that of the instant claims.

Additionally, the assertion that '371 does not disclose the combination of battery elements is not correct. If the exact same structures were disclosed a 35 USC 102 rejection would have been warranted. Rather, the '371 patent suggests strongly to the artisan what will work with the transition metal oxide. As an example in col. 4, lines 54-61 that the electrolyte may be a solid or a liquid.

Moreover, the assertion that the example in '371 suggests using a lithium sheet as an anode may be correct. However, all that is required by the prior art is a fair suggestion of the materials that may be used as an anode, i.e. lithium as well as the transition metal oxide.

The assertion that the prior art is not analogous art as it does not deal with a rocking chair cell is also not convincing. If the instant claims select the materials suggested by the prior art then a rocking chair cell would also result.

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3. Claims 1, 3-4, 7-20 are rejected under 35 U.S.C. § 103 as being unpatentable over Thackeray 4,980,251.

The instant claims have been summarized supra.

1251  
in view  
of  
1371  
Thackeray '251 teaches spinel compounds having the same structure as the spinel compounds of the instant claims (col. 2, lines 6-37). The spinel structure may comprise the anode and cathode (col. 2, lines 37-68). Moreover, the cathode may also be selected from a transition metal oxide material and an anode comprising a lithium or lithium alloy (col. 3, lines 25-44).

The reference does not specifically list the valence numbers, etc.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because the skilled artisan recognizes that the properties of the spinel material are a result of the type of metal inserted into the crystal structure.

Moreover, the battery elements are seen as conventional and well known in the art, thus they are obvious.

#### *Response to Arguments*

The rejection is still applicable for the reasons above. The assertion that the prior art uses a metallic lithium may be correct. However, it is pointed out that when a battery system has the same elements for electrodes as those claimed, it can be

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deduced that the battery is functioning identically, irrespective if the electrodes are named anodes or cathodes. It is noted that during charging the cathode has a negative charge and the anode has a positive charge. During discharge the opposite is true. Thus, depending on the state of the battery, the electrodes may be labelled anodes or cathodes.

Hence a rocking chair battery would also result in the prior art.

4. Claims 1, 3-20 are rejected under 35 U.S.C. § 103 as being unpatentable over Thackeray 5,316,877.

Instant claims 5-6 claim specific spinel structures. Amongst them are  $\text{Li}_2\text{Mn}_4\text{O}_9$  and  $\text{Li}_4\text{Mn}_5\text{O}_{12}$ .

The reference teaches a spinel material having two of the claimed structures, i.e.  $\text{Li}_2\text{Mn}_4\text{O}_9$  and  $\text{Li}_4\text{Mn}_5\text{O}_{12}$ . (col. 1, lines 46-63). The materials for the electrodes and electrolyte are seen in the claims.

The reference does not explicitly state all the valence numbers, and characteristics of the materials.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because the skilled artisan recognizes that the valence of each elements depends on which elements are selected to make

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the crystal structure. Moreover, the artisan recognizes that the particulars of the cell are conventional in the art.

#### *Response to Arguments*

The rejection is still applicable for the reasons above. The response to these arguments has been addressed in the previous two rejections, hence the same reasons are applicable to this rejection.

#### *Conclusion*

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

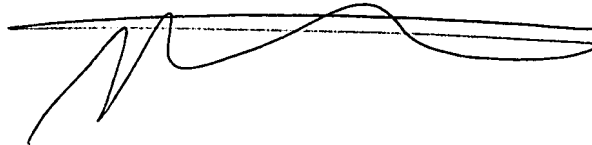
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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Nuzzolillo whose telephone number is (703) 305-3776. The Group Receptionist may be reached at (703) 308-0661. The group FAX number is (703) 305-3600.

M. Nuzzolillo  
Patent Examiner  
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A handwritten signature in dark ink, consisting of a series of loops and a long horizontal stroke, positioned below the typed name.

M. N.  
September 16, 1996